

1
2 GARY B. JOHNSON, Continuing

3 EDWIN L. CARSTENSEN, Continuing

4 JONATHAN M. CHARRY, Continuing

5 ROBERT S. BANKS, Continuing

6 STAFF EXAMINATION

7 BY MR. FEBIGER:

8 Q. I'd like to begin with the material on
9 the electrical effects of the AC-DC transmission
10 lines. I'll be directing my questions to Mr.
11 Johnson, who prepared the testimony on that
12 subject.

13 I'd like to begin with the design
14 information about the proposed and existing lines
15 which you used for your analysis, Mr. Johnson. An
16 overview of your information sources appears on
17 Pages 8 and 9 of your testimony.

18 MS. LEWIS: Dr. Johnson; is a doctor.

19 MR. FEBIGER: Dr. Johnson; excuse me.

20 Q. You state that, in addition to
21 information on cross-sectional configuration for
22 the right of way, the petitioners provided you
23 with line currents and ground clearances expected
24 under heavy-power-load operating conditions. Is

1 that correct?

2 A. (Johnson) That's correct.

3 Q. Does this statement mean that ground
4 clearance is affected by the level of power load?

5 A. (Johnson) It is affected by the power
6 load. What happens, as you push more current
7 through the conductors they warm up, and as they
8 warm up they expand; and so sag a little bit, and
9 get closer to the ground, as more and more power
10 is transmitted over them.

11 Q. I'd like to refer to Exhibits JB 1,
12 JB 2 and JB 3 collectively. These are the cross-
13 sectional views of the right of way.

14 I note at the bottom of each of
15 these figures or exhibits it indicates that the
16 conductor sags and clearances are at 60 degrees
17 Centigrade. Am I correct that this is air
18 temperature?

19 A. (Johnson) It's my understanding that
20 60 degrees Centigrade that you referred to would
21 be the considerations of the air temperature; so
22 it is a quite warm air temperature, very
23 conservative assumption.

24 Q. In other words, it's a very high

1 worst-case temperature assumption?

2 A. (Johnson) That's correct.

3 Q. Would it reflect in any way the heating
4 effect caused by the current that you referred to
5 earlier?

6 A. (Johnson) The exact assumptions that
7 were used to determine that temperature, as given
8 by the petitioners, I'm not certain of. I can
9 check into that matter and get back to you on it.

10 Q. On Page 9 of your testimony, you
11 specified the assumption as to phase relationships
12 of voltages on the AC conductors. Would you refer
13 to the exhibits, and briefly explain the phasing
14 assumptions that you made, and how you went about
15 making them?

16 A. (Johnson) Could you perhaps be a little
17 more specific? Just in general terms, or?

18 Q. In general terms, yes. What did you
19 need to specify about the phasing?

20 A. (Johnson) Well, in the case of AC lines,
21 and the phasing of the different bundled
22 conductors for a particular line, especially when
23 you have say two AC lines together, you can choose
24 the phasing. Depending on how you choose the

phasing, you will affect the electric fields let's say produced at ground level, and also the electric fields at the surface of the conductor.

Since the different conductors in the line are at different frequencies, they're at the same frequencies but at different phasings, so they will enhance or subtract from each other depending on how the phasings are chosen.

What I did was choose the phasings to produce the lowest electric field levels at ground level.

Q. And that is the condition which would prevail most of the time, in your view?

A. (Johnson) Yes. That's my understanding.

MS. LEWIS: I don't believe I understood the question. What would prevail most of the time?

MR. FEBIGER: Well, the witness understood the question. He made some assumptions about phasing to use in calculating electrical effects on the edge of the right of way; and I'm just trying to determine if that's a condition which would prevail all of the time, most of the time...

1 MS. LEWIS: If that is the phasing
2 that would always be present on the right of way?

3 MR. FEBIGER: Yes.

4 A. (Johnson) In terms of the AC line,
5 where the lines were existing, I used the existing
6 phasings. For the new lines, I assumed a phasing
7 that would give lower electric fields at ground
8 level. If those are the phasings used, then they
9 would be the phasings that would be used most of
10 the time.

11 Q. Thank you.

12 MR. FEBIGER: May I go off the
13 record for a second?

14 MR. RAMM: Sure. Off the record.

15 (Discussion off the record)

16 MS. RAMM: On the record.

17 BY MR. FEBIGER:

18 Q. Dr. Johnson, the cited reference for
19 your calculation of noise levels is indicated on
20 Page 9. I'd like to refer to that. You used the
21 Document Transmission Line Reference Book, 345 KV
22 And Above, Second Edition; is that correct?

23 A. (Johnson) That's correct.

24 Q. Does this mean that the noise